May 2019

Department for Business, Energy & Industrial Strategy

Call for Evidence: Future frameworks for international collaboration on research and innovation:

Written submission on behalf of the Engineering Professors' Council

The Engineering Professors' Council represents the academic engineers in the UK, with 85 university engineering faculties as members comprising over 7,500 academic staff.

Our primary purpose is to provide an influential voice and authoritative conduit through which engineering departments' interests can be represented to key audiences such as funders, influencers, employers, professional bodies and government. All branches of engineering are represented within the EPC's membership.

Engineering relies on global collaboration more than most disciplines; our university engineering departments have higher proportions of international researchers than the average for all subjects and the ability of the UK to attract the best researchers in a field is critical to the maintenance of the UK's excellence in research and higher education and its attractiveness to experts from all over the world as a destination to research, study and teach. The UK higher education sector's reputation as a collaborator of choice in critical cross-border research and innovation is key to its success as a learning provider in which capacity it attracts £13.4 billion annually in education export revenues.

We strongly urge that the future immigration system supports efforts to expand the research and innovation workforce, including attracting and retaining talented people from overseas for work and study. For research, it must enable the UK to both retain and attract talented researchers to study or take up permanent or short-term positions and facilitate visits for conferences, collaborations or exchanges that are fundamental to the practice of research.

In March 2019 the EPC published a research briefing on the impact of Brexit on engineering research funding[1], which sets out the implications for engineering of not being able to participate in EU research and innovation programmes. The analysis shows the critical role EU funding has in fuelling innovation through engineering research, which boosts industry at a regional level, which in turn drives the national economy.

The research highlights the important support to regional industries provided by universities through EU research funding, which is particularly discipline-fragile because it is typically dependent on a small number of critical players for whom EU funding is key. Without locally driven EU collaborations, regional and national growth will be compromised because there is a 'cascade effect' on manufacturing and linked industry jobs dependent on regional research and development.

The report also highlights the accelerator effect of EU collaboration and cautions against underestimating the value of the scope for joint working. In preparing evidence for the Brexit Select Committee in January 2017, the EPC described a 'multiplier effect' deriving from EU funded research, because the UK benefits from the total research output, not just that component which is conducted within the UK. The EPC conservatively estimated

[1] http://epc.ac.uk/wp-content/uploads/2019/03/Brexit-Impact-Briefing.pdf

that effect as increasing the value to the UK of Eu-funded research income by a factor of 3.3.

Universities UK found in 2016 that the £836 million of EU research funding to UK universities in 2014/15 generated over 19,000 full-time-equivalent jobs across the UK, £1.86 billion of output and contributed over £1 billion to GDP. Meanwhile, Horizon 2020 impact assessments calculated that across all member states, every euro of funding for the programme led to an increase in industry–added value of €13.

National research collaborations, facilities and EU research expertise — facilitated by EU collaboration and coordination — enhance the quality, reach and impact of UK research to an extent that enables approaches to large-scale problems that one country would struggle to achieve alone (such as Engineering's 'Grand Challenge' problems). It is essential for UK researchers to have access to knowledge, expertise and facilities that lie outside the UK. (For example, the ITER fusion research project, for which 45% of the €13 billion cost is funded by the EU).

The role and benefits of EU membership to UK research is broader than simply the (match) funding for research that EU projects bring to the UK.

While we welcome the government's commitment to the Industrial Strategy and increasing R&D spending to 2.4% of GDP by 2027, we also caution that the success of both depends on continued association to EU research and innovation programmes.

We fully support the widely held sector view that the UK should seek the closest achievable association with the current and future EU research and innovation programmes to support the UK's ambitions in in international collaboration. The UK should prioritise participation in EU schemes that the UK would be unable to replicate alone, such as large-scale international collaborations.